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(54) Title of the Invention:        Golf putter

(57) Abstract

Purpose:        To provide a golf putter which is lightweight and provided with a thin-plate head portion.

Composition:    A golf putter having a thin-plate head portion with a plate thickness dimension of 1mm to 10mm, with a horizontally long linear ball impact portion formed on the front edge 1, and a protrusion 3 formed on the bottom surface or top and bottom surfaces of the thin-plate head portion.

[figure]

## Claims

### Claim 1

A golf putter characterized by having a thin-plate head portion with a plate thickness dimension of 1mm to 10mm.

### Claim 2

A golf putter characterized by having a thin-plate head portion with a horizontally long linear ball impact portion formed on the front edge.

### Claim 3

A golf putter described in Claim 1 and Claim 2, with a protrusion formed on the bottom surface or top and bottom surfaces of the thin-plate head portion.

## Detailed Description of the Invention

### 0001

#### Industrial Field of Use

This invention relates to a golf putter.

### 0002

#### Prior Art

Conventional golf putters had a vertical width of about 20mm to 30mm on the face surface when poised to swing. Therefore, the impact point and center of gravity did not exist on a horizontal line to the ball impact direction. Also, the hand movement for moving the head was subtle and difficult, making it easy for the face surface orientation to deviate during a stroke.

### 0003

#### Problem the Invention is to Solve

Conventionally, putter heads were always assumed to have a face surface. The drawback to this could only be overcome by training putting skills, which has been interpreted as inevitable. Thus, countless putters have been designed and researched to cover for this drawback.

### 0004

Even so, solving the problem has reached its limit, because of the existence of a face surface on the putter head, [said surface] having vertical width.

0005

Therefore, the stroke is a putting skill that is extremely difficult, and putting dominates a large proportion of the golf game. Particularly, the shock of missing a short putt can be called a type of stress for golfers.

0006

When a face surface of a conventional putter is used to hit and roll a ball, this face surface freely changes vertical and horizontal directions, and thus a slight variation during the stroke will affect how the ball rolls or launches.

0007

Therefore, The stroke for stabilizing the rolling of the ball is extremely difficult.

0008

And this fact becomes the greatest [psychological] pressure in putting, causing distress for golfers.

0009

Innovations have been made to widen the sweet spot by using heel-toe balance or a hollow head, and research for face stability upon impact has been made by trying varied neck angles or by shifting the shaft insertion location.

0010

Thus, despite a history of changing designs and changing materials, said problem still remains.

0011

Reverse-loft putters and curved surface putters having a vertically rounded face surface do have a different effect on ball rolling compared to conventional putters. However, the impact point (point of contact between face and ball) upon impact does not horizontally match the center of gravity for the putter head.

0012

To resolve these inconveniences, the golf putter of this invention has almost eliminated the face surface from the putter head.

0013

This is a revolutionary putter which allows putting without considering "face direction" during the stroke, because the only requirement during addressing is to put the front edge

at a right angle to the line.

0014

The difficulty of putting with conventional putters was to move the vertical face surface such that [said surface] did not twist away from the line. [This invention] resolves this point.

0015

Because the putter itself has no vertical surface, a ball hit with a side edge of a flat plate has rolling stability and directionality without dispersing energy vertically.

0016

Though the total head weight is light, the center of gravity is directly behind the impact point, and therefore concentrates on the hitting point and energy is efficiently and accurately transferred, thus dramatically improving the rolling of the ball.

0017

The ball hit with the side surface of this flat plate starts a rolling movement from the start, and is less affected by the grain.

0018

Also, because this eliminates the pressure to accurately move a vertical face surface horizontally, relaxed putting is enabled.

0019

Also, the golf putter in this invention only requires thinking of horizontally moving a line perpendicular to the putting line, or a level plane having said [perpendicular] line as one edge, thus greatly reducing misses caused by three-dimensional changes occurring when horizontally moving a vertically oriented face surface.

0020

This simplifies the operation of rolling the ball (straight).

0021

In addition, upon impact, the putter head center of gravity depth is large relative to the impact point. Stability of directionality is also high.

0022

And because the head weight is not dispersed vertically, is concentrated horizontally at the impact point height, putting with very good rolling is enabled, even with a light-weight

balance.

0023

The advantages of a light putter head are difficult to imagine until actually hitting a ball, and are found in unlikely areas.

0024

First, the ease of swinging and comfortable swing make it easy to directly transfer arm movement into the putter head stroke.

0025

Horizontally moving a putter head having a conventional weight requires precise timing in moving the grip portion in the hands and the head at the tip. Otherwise, the face surface and stroke arc deviate easily, so the rhythm is of nearly unattainable difficulty.

0026

To address this, a putter with a drastically thick and square grip was released and gathered attention, but it seems the grip was too thick to be accepted by the public.

0027

The excessive labor required for moving a weighted head, and the movement deviation occurring from this labor, have made it difficult to control the orientation of the conventional putter face.

0028

The second advantage of a lightweight putter head is that hitting the ball slightly off of the sweet spot results in only a small face surface shift at the moment of impact.

0029

Though the golf putter in this invention has no surface to call a face, if this is called a front edge, then this edge line has a considerably smaller degree of change in orientation caused by a missed hit, compared to the degree of deviation of a conventional putter face.

0030

Take, for example, when the sweet spot is missed and the ball is hit closer to the toe. Then, the difference in weight from the impact point location toward the toe and the weight toward the heel acts as a force rotating the putter head (if right-handed) clockwise, opening the face surface. The smaller the difference between the toe end and the heel end, the less the head rotates.

0031

In other words, the more weight in the toe and heel, the more this clockwise rotation force operates.

0032

The reason that some putters with small heads have good directionality also comes from this principle.

0033

And the third advantage is that the lightweight head more easily transmits the feel of the ball to the hands at impact, and thus even the sense of distance on long putts are easy to grasp.

0034

With a conventional putter, a heavy head must be moved considerably, and twisting occurs easily within that process. But with a lightweight putter head, the ball rolls well even with a small stroke, vastly improving directionality in addition to a sense of distance.

0035

When using this putter with a large face surface, The face surface orientation freely changes vertically and horizontally with the mere movement of the grip, making the launching direction of the hit ball unstable. In addition, in a situation where the sweet spot is missed, the face opens when the ball hits toward the toe, and the face easily closes when the ball hits toward the heel, which had a major effect on directionality.

0036

Means for Solving the Problem

The golf putter in this invention is characterized by having a thin-plate head portion with a plate thickness dimension of 1mm to 10mm.

Operation

Because the head portion is thin, and viewed from the impact point the weight is not dispersed vertically, the ball impact energy concentrates along a line directly behind the impact point, thus enabling providing ample rolling to a ball, even with a light-weight head.

0038

Because the putter head is light-weight, and in addition, the center of gravity and the impact point exist on one line, the force at the time of impact is sensitively felt in the hands.

Thus, the sense of putting distance is easily acquired.

0039

Because the head portion is thin, and is provided with a horizontally long linear ball impact portion on the front edge, it is possible to put a ball into over-spin or to suppress over-spin by hitting slightly upward or slightly downward relative to the ball center. Also, the ball can be put into a backspin by hitting a considerably low portion of the ball, or the ball can be launched in a jump.

0040

Embodiment

The figures show an embodiment of the golf putter in this invention.

0041

The golf putter in this invention has a thin-plate head portion 2 with a plate thickness dimension of 1mm to 10mm. Conventional golf putters had a vertical width of about 20mm to 30mm on the face surface, when poised for a stroke. This conventionally known golf putter head portion has left a strong impression requiring movement of the face surface parallel to the ball hit direction. However, the head portion 2 of the golf putter in this invention is formed of simply a thin plate, and will leave the user with a strong impression of being something thin, thus dispelling the [sense of] difficulty given by the conventional putter. The head 2 flat surface shape can be of any of these shapes: trapezoid, rectangular, semicircular, T-shapes, B-shaped, E-shaped, C-shaped, etc. Also, though the depth from the front edge 1 is not limited, this is not longer than the length of the front edge 1 in the horizontal direction. Regardless, the front edge 1 impact point and center of gravity are such that they exist on one horizontal line in the ball impact target direction.

The next composition of a golf putter in this invention has a protrusion 3 formed of very light-weight material on the bottom surface of the thin-plate head portion 2. Two or more of this protrusion 3 could also be formed. This protrusion 3 enables the head portion 2 to move smoothly on the turf, and also serves to adjust the height such that the front edge 1 is located at a certain height. Thus, to enable the head portion 2 to slide well, forming the protrusion 3 in a partial sphere shape or a boat floor shape would be good. Also, this protrusion 3 can be made to attach and detach, and be exchanged for a different weight or shape. And a protrusion could also be provided on the top surface of the head portion 2. Forming these protrusions from partial spheres modeling a golf ball results in good appearance and usage.

0043



The golf putter in this invention has almost now face surface, and has a front edge 1 formed on a narrow band surface. A horizontally long linear ball impact portion could also be formed on the front edge.

0044

This linear ball impact portion refers to the front edge 1 cross-section being formed in a sideways V shape, an arc shape, etc. Even when a long narrow small edge surface is formed on the cross-section of this V shape or arc shape, this shall be called a linear ball impact portion.

0045

Figure 4 describes a summary of ball impact on a ball B by a head portion 2.

0046

a is ball impact at an upper portion from the center line x of the ball B, b is ball impact on the center line x, and c is ball impact at a lower portion from the center line x. When the head portion 2 impacts the ball B in the b1, a1, and a2 directions, the ball B is put into a smooth overspin, and rolls forcefully. This is effective for putting on a rising slope or a flat plane. And when the head portion 2 impacts the ball B in the b3, c1, or c2 directions, excess overspin is controlled and rolling is weakened. This is effective for putting on a descending slope.

0047

The ball impact summary in Figure 5 shows that upward ball impact at a considerably low portion of the ball B in the arrow direction can cause the ball B to launch into a jump, or put a considerably strong backspin on the ball B.

0048

As in Figure 6, even if the front edge 1 does not perpendicularly hit the ball impact target or misses the sweet spot, because the head portion 2 plate thickness dimensions are thin and light, rotation deviation and center of gravity deviation are not easily generated like hitting the ball B with a vertical face surface. Therefore, rolling toward the ball impact target does not greatly deviate. Reference number 4 is a shaft.

0049

#### Effect of the Invention

Because the head portion is thin, and the weight is not dispersed vertically when viewed from the impact point, the ball impact energy concentrates along a line directly behind the impact point, thus enabling providing ample rolling to a ball, even with a light-weight head.

0050

Because the putter head is lightweight, and additionally the center of gravity and the impact point exist on one line, the feel of the ball at impact is easily transmitted to the hands, and the sense of putting distance is easily expressed.

0051

Because the entire head is thin, it is possible to put a ball into over-spin or to suppress over-spin by hitting slightly upward or slightly downward relative to the ball center. Also, the ball can be put into a backspin by hitting a considerably low portion of the ball, or the ball can be launched in a jump.

0052

Also, even when the front edge does not hit the ball impact target perpendicularly, or hits missing the sweet spot, because the plate thickness dimension for the entire head is thin and light and has nothing to call a surface, rotation twists relative to the ball are not generated easily. Thus, rolling toward the ball impact target does not greatly deviate.

#### Brief Description of the Drawings

Figure 1

A perspective view of the head portion of the golf putter in this invention.

Figure 2

(a) and (b) are enlarged partial section views of the front edge.

Figure 3

A side view with the head portion set on the center line of the ball.

Figure 4

A side view describing a summary of ball impact.

Figure 5

A side view describing a summary of ball impact.

Figure 6

A flat view with the front edge not contacting the ball perpendicularly to the ball impact target direction, and missing the sweet spot upon hitting.

Reference Numbers

- 1 Front edge
- 2 Head portion
- 3 Protrusion
- B Ball

[Figures]